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PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-209227

(43)Date of publication of application : 03.08.2001

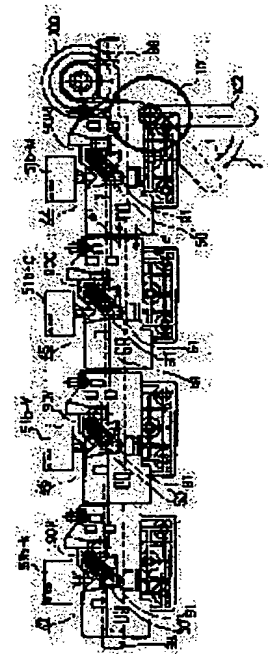
(1)Int.Cl.	G03G 15/01 G03G 15/00
(1)Application number : 2000-016904	(71)Applicant : CASIO ELECTRONICS CO LTD CASIO COMPUT CO LTD
(2)Date of filing : 26.01.2000	(72)Inventor : NARA HIDEKAZU HIROZAWA SHIGERU

I) IMAGE FORMING DEVICE

Abstract:

PROBLEM TO BE SOLVED: To provide an image forming device, is particular, where a multiple number of image forming units can be simultaneously locked and where a locking procedure is simple in regard to an image forming device of a tandem method where an upper part machine body can be released from a lower machine body.

SOLUTION: In the device, a bearing member 92 is provided in each bearing part of 90M to 90K, an actuator 98 is moved leftward by operating a lever 102 in a direction of an arrow 'f', for example, in a state where a drum shaft 50' of a photoreceptor drum 50 constituting the image forming unit is set in a recessed part 91, the bearing member 92 is moved to a position of a lid line and the drum shaft 50' of each photoreceptor drum 50 is pressed. With this constitution, 4 pieces of the drum shafts 50' can be simultaneously locked by one operation of the lever 102 and locking of the image forming units 44 to 47 can be easily and efficiently carried out.



GAL STATUS

date of request for examination]	17.09.2003
date of sending the examiner's decision of rejection]	
kind of final disposal of application other than the examiner's decision of rejection or application converted to registration]	
date of final disposal for application]	
patent number]	
date of registration]	
number of appeal against examiner's decision of rejection]	
date of requesting appeal against examiner's decision of rejection]	

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AIMS

aim(s)]

aim 1] In image formation equipment of a tandem system which two or more image formation units were prepared in up airframe, and constituted said up airframe possible [closing motion] to a lower airframe When a positioning shaft prepared in said two or more image formation units, respectively and said up airframe is closed on said lower frame, It is image formation equipment which, as for these two or more bearings, has a lock device by forming two or re bearings which contact said positioning shaft in said lower airframe, and is characterized by this bearing being ked by single lever actuation.

aim 2] It is image formation equipment according to claim 1 which said up airframe and lower airframe have an frame breaker style connected by link mechanism, and Kaisei of said up airframe is carried out to an abbreviation izontal to said lower airframe, and is characterized by carrying out Kaisei of said up airframe to the time of closing h this posture to said lower airframe.

aim 3] It is image-formation equipment according to claim 2 characterized by having one pair of link member which ; the 1st and 2nd arm which looks at said airframe breaker style to a cross direction of equipment, and has the rotation pporting point on said lower airframe of a posterior part and abbreviation center section, respectively, and connected ; supporting point and the opposite side respectively free [rotation on said up airframe], changing, and preparing this c member in both sides of equipment, respectively.

aim 4] Said lock device is image formation equipment according to claim 1 characterized by driving said bearing and king said positioning shaft with driving force changed by body of revolution which is interlocked with a lever and ated, gear which carries out adjustable [of the rotation of this body of revolution] to driving force of said bearing, l this gear.

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TAILED DESCRIPTION

ailed Description of the Invention]

01]
eld of the Invention] This invention relates to the image formation equipment of the tandem system which can open
up airframe to a lower airframe.

02]
escription of the Prior Art] Drawing 15 is the appearance perspective view of conventional printer equipment (image
formation equipment). In this drawing, printer equipment 1 consists of the roofs 2 and the body lower parts 3 of
equipment which are the upper part of an equipment body. The paper output tray 6 into which the delivery opening 5
h which a form is delivered to the top face, and the form to which paper was delivered are loaded is formed in a roof
n the body lower part 3 of equipment The form cassette 8 which can be detached and attached more freely than the
nt cover 7 and the body lower part 3 of equipment which can be opened and closed in the front face is arranged. The
'F tray 9 (multi-paper feeder: general-purpose medium tray) which can be contained in the body lower part 3 of
equipment is arranged by the right lateral, and the actuation display 4 which performs the status display of the
ormation input to printer equipment 1 or printer equipment 1 is formed in the top-face right-hand side.

03] In this printer equipment 1, in case jam processing, a maintenance, etc. are worked, Kaisei of the roof 2 is carried
in the direction of arrow-head B a core [a revolving shaft A]. Drawing 16 shows the cross-section configuration at
time of carrying out Kaisei of the above-mentioned printer equipment 1, and shows the internal structure. As shown
his drawing the standby roll pair which the form cassette 8 which can detach and attach printer equipment 1 freely,
feed roll 12 which carries out the sequential feed of the form by which loading receipt was carried out into this form
sette 8, and the form with which it has been fed are made to once stand by, and sends them out to the image
formation unit 11 to predetermined timing -- 13 and a toner image the delivery roll pair which discharges a form
nishing / the fixing assembly 14 fixed on a form, and fixing] out of equipment -- it has the above-mentioned
uation display 4 which performs 18 (drive roll 18a and follower roll 18b) and various setup to printer equipment 1, a
tus display, etc.

04] Moreover, in the image formation unit 11, the electrification machine 25 electrifies the circumferential front face
the photo conductor drum 23 in uniform potential, a print head 26 is alternatively exposed to the peripheral surface of
photo conductor drum 23 based on print data, and forms the low voltage section by the exposure, and records the
ctrostatic latent image which consists of initial electrification potential and the exposure low voltage section on photo
ductor drum 23 peripheral surface. A development counter 27 transfers an internal toner to the low voltage section of
photo conductor drum 23 through development roll 27a, and develops an electrostatic latent image (development).
e imprint machine 28 imprints the toner image on the photo conductor drum 23 by the electric field of reversed
larity in the space of the form conveyed.

05] In addition, about the photo conductor drum 23, the electrification machine 25, a development counter 27, the
print machine 28, and a cleaner 24, it prepares for the body lower part 3 of equipment among the image formation
its 11, and the roof 2 which is the upper part of an equipment body is equipped with the print head 26.

06] Here, a roof 2 is constituted by the supporting point free [closing motion] in an arrow head B and the direction
B' in a hinge region 15 to the body lower part 3 of equipment. At this time, the above-mentioned print head 26 and
lower roll 18b are opened and closed united with a roof 2. The roof 2 which the roof 2 shown in the continuous line
this drawing shows a closing condition, and is shown in a dotted line shows the Kaisei condition.

07] The 1st cartridge C1 with which most image formation units 11 constitute the cartridge C which can be detached
d attached freely to the body lower part 3 of equipment, and, as for this, it, on the other hand, comes to unify the
oto conductor drum 23 and cleaner 24 grade, Division and coalesce are possible to the 2nd cartridge C2 with which it

nes to unite development counter 7 grade. Where Kaisei of the roof 2 is carried out, attachment and detachment of se cartridges C1 and C2 are attained to the predetermined applied part of the body lower part 3 of equipment, for mple, the maintenance of the maintenance check activity of exchange of these cartridges, supply of an article of assumption, etc. is performed by degradation of a photo conductor, consumption of a toner, etc.

08]

oblem(s) to be Solved by the Invention] On the other hand, color printer equipment (color picture formation ipment) is used widely today, and various approaches are adopted also for the method of color printing. For mple, two or more development counters are arranged near the peripheral surface of one photo conductor drum, and re is a method which forms a toner image in a drum side one by one (method of (**)). Moreover, there is also a thod which uses a drum-like middle transfer medium (method of (**)), further two or more image formation units are angled in the predetermined direction, and the method (the so-called tandem system) which forms a direct toner image i form also exists.

09] It is necessary to use a photo conductor drum with a big configuration by the method of the above-mentioned (b) his, and a print speed falls. Moreover, by the method of (b), in order to use a middle transfer medium, a configuration omes large. Then, a print speed is excellent and the color printer of a tandem system with few problems is promising o in respect of a configuration. And with the printer equipment of this method, yellow (Y), MAZENDA (M), nogen (C), and four image formation units of black (K) are used, for example.

10] For this reason, with the image formation equipment of a tandem system, since two or more image formation ts are used as mentioned above, in case an image formation unit is driven, each image formation unit certainly needs e locked. And it is necessary to lock two or more image formation units simply. Moreover, it is required for the age formation unit itself to be also easily exchangeable.

11] The technical problem of this invention is that can lock two or more image formation units in coincidence, and k actuation also offers easy image formation equipment.

12]

eans for Solving the Problem] In the image formation equipment of the tandem system with which according to ention according to claim 1 the image formation unit of plurality [airframe / up] was prepared, and, as for the ve-mentioned technical problem, constituted said up airframe possible [closing motion] to the lower airframe When ositioning shaft is prepared in said two or more image formation units, respectively and said up airframe is closed on d lower airframe, Two or more bearings which contact said positioning shaft are formed in said lower airframe, and se two or more bearings have a lock device, and can attain this bearing by offering the image formation equipment ked by single lever actuation.

13] Here, the image formation equipment of this example is image formation equipment of a tandem system, for mple, is the configuration that arrange yellow (Y), MAZENDA (M), cyanogen (C), and the image formation unit of ck (K) in the conveyance direction of a form one by one, imprint the toner of each color, and a fixing assembly forms heat fixing processing.

14] Moreover, the above-mentioned yellow (Y), MAZENDA (M), cyanogen (C), and the image formation unit of ck (K) are prepared in an up airframe, and the positioning shaft is set to each image formation unit. This positioning ift is a part of member on the configuration of an image formation unit, for example, sets a positioning shaft as the im shaft of a photo conductor drum.

15] Moreover, a bearing is a configuration which the above-mentioned positioning shaft contacts this bearing, and ks a positioning shaft with a bearing using a lock device, when it is prepared in the above-mentioned lower airframe e and the above-mentioned up airframe is closed by the lower airframe. Moreover, the above-mentioned lock is formed by operating a single lever (one piece).

16] Thus, when a positioning shaft is locked simply and an up airframe is closed by the lower airframe by stituting, an image formation unit is certainly locked through the lock of a positioning shaft.

17] Invention according to claim 2 has the airframe breaker style with which said up airframe and lower airframe re connected by the link mechanism in invention according to claim 1, Kaisei of said up airframe is carried out to an revation horizontal to said lower airframe, and said up airframe is a configuration by which Kaisei is carried out to : time of closing with this posture to said lower airframe.

18] Thus, even when it can consider as the configuration which detaches and attaches for example, each image mation unit horizontally by constituting and locks the above-mentioned positioning shaft with a bearing, a lever can easily operated from a transverse plane.

19] It is the configuration that have one pair of link member which has the 1st and 2nd arm which invention ording to claim 3 looks at said airframe breaker style to the cross direction of equipment in invention according to

im 2, and has the rotation supporting point on said lower airframe of a posterior part and abbreviation center section, pectively, and connected this supporting point and the opposite side respectively free [rotation on said up airframe], nge, and this link member is prepared in the both sides of equipment, respectively.

120] Thus, by constituting, Kaisei of the up airframe can be carried out to an abbreviation horizontal to a lower frame. Said lock device is the configuration that invention according to claim 4 drives said bearing, and locks said sitioning shaft with the driving force changed by the body of revolution which is interlocked with a lever and rotated nvention according to claim 1, the gear which carries out adjustable [of the rotation of this body of revolution] to driving force of said bearing, and this gear.

121] Thus, by constituting, by lever actuation, a lock device is used, and two or more positioning shafts can be put in ck, it can lock in coincidence, and two or more lock actuation can be performed easily.

122] [embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained, referring to a drawing. awing 1 is image formation equipment of this operation gestalt, and is the example of the so-called color printer of a dem system. Printer equipment 31 is connected to host devices, such as a personal computer, by the non-illustrated le in this drawing.

123] Printer equipment 31 is constituted by the upper part 32 of an equipment body, and the body lower part 33 of ipment, and the operation panel 34 is arranged in the upper part 32 of an equipment body, and the delivery unit 35 of rint form is also formed in the top face. The operation panel 34 consists of liquid crystal display 34b which displays it key stroke section 34a in which two or more keys were arranged based on the display information outputted from a-illustrated CPU. Moreover, the printout created by the delivery unit 35 by the image formation unit later mentioned rotation of the delivery roll 36 is discharged, and sequential loading is carried out on a delivery unit 35.

124] Moreover, it is the configuration which can detach and attach the conveyance unit for double-sided printing ntioned later by opening the lid which is not illustrated [which the conveyance unit for double-sided printing and et paper cassette which are mentioned later were arranged by the body lower part 33 of equipment, for example, was pared in the left lateral of printer equipment 31]. Moreover, the sheet paper cassette 38 which can be detached and ached in the body lower part 33 of equipment more freely than the front cover 37 and the body lower part 33 of ipment which can be opened and closed in the front face is formed, for example, a front cover 37 is wide opened in a processing, a maintenance, etc.

125] Moreover, the applied part 39 of an MPF tray and covering 40 are formed in the right lateral of the body lower t 33 of equipment. However, in drawing 1 , it is in the condition that the above-mentioned applied part 39 is not ipped with the MPF tray. Moreover, covering 40 is covering for a form conveyance way check mentioned later, with s gestalt, opens this covering 40 wide and maintains form plugging etc.

126] Drawing 2 is the external view of the printer equipment 31 in which the condition of having opened the above- ntioned front cover 37 and the covering 40 grade wide is shown. Moreover, in case a sheet paper cassette 38 is ntained as mentioned above by the bottom of the printer equipment 31 of this example and a form is supplied to a et paper cassette 38, a sheet paper cassette 38 can be pulled out in the direction of an arrow head by lengthening ride 38a to the front.

127] Drawing 3 is a sectional view explaining the internal configuration of the printer equipment 31 which has the ove-mentioned appearance. In this drawing, printer equipment 31 consists of the image formation section 41, a rveyance unit 42 for double-sided printing, and the feed section 43. Here, the image formation section 41 is the nfiguration which installed four image formation units 44-47 in the direction of an arrow head, and is arranged toward t-hand side in order of MAZENDA (M), cyanogen (C), yellow (Y), and black (K) from the space right-hand side of s drawing. Moreover, MAZENDA in this (M), cyanogen (C), and the image formation units 44-46 of yellow (Y) are nfigurations which color-print with subtractive color mixture, and use the image formation unit 47 of black (K) for nochrome printing.

128] Here, each above-mentioned image formation units 44-46 are the same structures except for the color (color of a ier) of the developer which consisted of a drum kit C1 and a toner set C2, respectively, and was contained by the elopment container. Then, the image formation unit 46 for yellow (Y) is made into an example, and a configuration explained. A photo conductor drum, an electrification machine, a print head, and a cleaner are contained by the drum C1, and the development roll and the toner are contained by the toner set C2. The peripheral surface consists of for ample, organic photoconductivity ingredients, and, as for the photo conductor drum 50, sequential arrangement of :ctrification machine 51a, print head 51b, development roll 51c, 51d of imprint machines, and the cleaner 51e is ried out near the peripheral surface of the photo conductor drum 50. The photo conductor drum 50 rotates in the ection of an arrow head, and is first charged uniformly in the peripheral surface of the photo conductor drum 50 by

urge grant from electrification machine 51a. And an electrostatic latent image is formed in the peripheral surface of photo conductor drum 50 by the optical writing based on the printing information from print head 51b, and a toner image is formed by the development by development roll 51c. At this time, the toner image formed in the peripheral face of the photo conductor drum 50 is based on the toner of the yellow (Y) color contained to development stainer 51c. Thus, the toner image formed in the peripheral surface of the photo conductor drum 50 arrives at the station of 51d of transfer rollers with rotation of the direction of an arrow head of the photo conductor drum 50, and is printed by the form which moves directly under the photo conductor drum 50 in the direction of an arrow head.

[29] Moreover, the drum kit C1 and the toner set C2 which constitute each above-mentioned image formation units 46 are constituted free [attachment and detachment] to the body of equipment, respectively. Insertion and detachment of this are attained by the unit applied part 63, and the unit applied part 63 has the rail configuration for making it insert, making an abbreviation horizontal direction slide a drum kit C1 and the toner set C2 to the part, respectively. Moreover, print head 51b is arranged in location in the space of the unit applied part 63 interior.

[30] Here, drum shaft 50' of the photo conductor drum 50 which constitutes some above-mentioned drum kits C1 is used as a positioning shaft. And in case this positioning shaft sets to the lower airframe 33 the drum kit C1 prepared in upper airframe 32, it is a configuration locked by the bearing mentioned later. Moreover, the image formation unit (drum kit C1) of each color is a configuration locked by the corresponding bearing at coincidence, respectively.

[31] On the other hand, the standby roll 52 is sent, and the form which conveyance of a form consisted of the sheet paper cassette 38 which constitutes the above-mentioned feed section 43, a standby roll 52, a conveyance belt 53, and a drive roll 54 grade, and was taken out by rotation of the feed roller 55 from the sheet paper cassette 38 is sent on the conveyance belt 53 to the timing which is further in agreement with a toner image, and reaches 51d of imprint machines. And the form with which the toner image was imprinted in 51d of imprint machines, and the toner image was printed moves in the direction of an arrow head in the conveyance belt 53 top according to migration of the conveyance belt 53, and heat fixing processing is performed in the fixing unit 56.

[32] Moreover, not only the toner image of the above-mentioned yellow (Y) but MAZENDA (M) imprinted with the drum kit C1 and the toner image of cyanogen (C) are imprinted by the top face of a form, and printing of the color according to the above-mentioned subtractive color mixture is performed on it.

[33] In addition, not only the form with which an above-mentioned form is taken out from a sheet paper cassette 38 but the form supplied from MPF tray 39' is contained, in this case, a form is carried in by feed roller 39a and printing processing is performed by the above-mentioned path.

[34] Moreover, the above-mentioned fixing unit 56 consists of hot calender rolls 56a and 56b and cleaning growl 56c, and Form P fuses the toner image of for example, two or more colors imprinted by the form while carrying out pinching conveyance of between above-mentioned hot calender roll 56a and 56b, and it carries out heat fixing at Form P. Moreover, cleaning growl 56c has the function to remove the toner which remains in hot calender roll 56a at the same time it applies mold-release characteristic oil to a hot calender roll 56a peripheral surface. In addition, the form with which it was fixed to the toner image is conveyed the upper part or leftward [space] by the fixing unit 56 through the change-over plate 61.

[35] On the other hand, it is the unit with which it equips in case the conveyance unit 42 for double-sided printing is constituted free [attachment and detachment] to the body of equipment and the printer equipment 31 of this example performs double-sided printing, and two or more conveyance rolls 60a-60e are arranged in the interior. When a form is sent up with the above-mentioned change-over plate 61 in double-sided printing, for example, the back end of a form reaches the conveyance roll 62, conveyance of a form is stopped and a form is further conveyed to hard flow. A form is sent with the conveyance rolls 60a-60e by this control by conveying a form caudad in the left-hand side of the change-over section 61 set as the location shown by the dotted line, and being carried in to the form conveyance way of conveyance unit 42 for double-sided printing, and it reaches to the standby roll 52, and it is sent to the imprint station to the timing which is in agreement with a toner image like the above-mentioned, and a toner image is imprinted the rear face of a form.

[36] In addition, only the location of the FR frame 65 (65a, 65b which are prepared in right and left of a color printer, respectively) which is a part of device for opening and closing the upper part 32 of an equipment body at an abbreviation horizontal to the body lower part 33 of equipment is shown in drawing 3.

[37] The upper part 32 of an equipment body is opened and closed at an abbreviation horizontal to the body lower part 33 of equipment, and a maintenance is performed in the printer equipment 31 of this example. Drawing 4 is a drawing showing the condition of having carried out Kaisei of the upper part 32 of an equipment body. As shown in this drawing, Kaisei of the upper part 32 of an equipment body is carried out maintaining an abbreviation horizontal to the body lower part 33 of equipment.

38] Next, in exchanging a drum kit C1 in this condition, as shown in drawing 5 , a drum kit C1 is extracted to the it, and it inserts the new drum kit C1. Moreover, when exchanging the toner set C2, as shown in drawing 6 , ilarly, the toner set C2 is extracted to the front, and the new toner set C2 is inserted. Thus, in the image formation ipment of this operation gestalt, it is independently removable on the body of equipment respectively in a drum kit and the toner set C2.

39] On the other hand, the breaker style of printer equipment 31 is a device for opening and closing the upper part 32 in equipment body at an abbreviation horizontal to the body lower part 33 of equipment, and drawing 7 is the earance perspective view of the printer equipment when carrying out Kaisei of the upper part 32 of an equipment ly by the breaker style.

40] As shown in this drawing, Kaisei of the upper part 32 of an equipment body is carried out maintaining an reviation horizontal to the body lower part 33 of equipment by the breaker style 64 prepared in printer equipment 31. e breaker style 64 is a configuration which sees from the transverse plane of printer equipment 31, and equips the h sides with a link frame 66, the F arm 67, the R arm 68, stay 69, and FR frame 65 grade, respectively. Moreover, the nnection relation of each part material constitutes so that it may support free [rotation] on the FR frame 65 in which onstituted so that the end of the F arm 67 and the R arm 68 might be supported respectively free [rotation] to the c frame 66 prepared in the upper part 32 of an equipment body, and the other end of the F arm 67 was prepared by body lower part 33 of equipment, and it constitutes so that the other end of an arm [68] R may support free ation] to the stay 69 fixed to the FR frame 65 further. By such configuration, Kaisei of the upper part 32 of an ipment body is carried out to an abbreviation horizontal to the body lower part 33 of equipment, and in connection h Kaisei, to the body lower part 33 of equipment, it retreats gradually and it moves in it.

41] In addition, in above-mentioned drawing 7 , for the facilities of explanation, printer equipment 31 is seen from a isverse plane, and the number is attached and shown only in the right-hand side part. In addition, in future lanation, a is given to each part material number of the link mechanism on the left-hand side of printer equipment and b is attached and explained to each part material number of a right-hand side link mechanism. therefore, each t material number of the link mechanism shown in above-mentioned drawing 7 -- 67b and R arm show [69b and the frame] by 68b, and stay shows [a link frame / 66b and F arm] by 65b.

42] Next, drawing 8 **** drawing 10 is the schematic diagram of the above-mentioned breaker style, drawing 8 ows the schematic diagram of a left-hand side breaker style seen from the left lateral, and drawing 9 shows the ematic diagram of a right-hand side breaker style seen from the right lateral. Moreover, drawing 10 is the perspective w. In drawing 8 thru/or drawing 10 , a link frame 66 (66a, 66b), the F arm 67 (67a, 67b), the R arm 68 (68a, 68b), y 69 (69a, 69b), and the FR frame 65 (65a, 65b) are the principal parts of a breaker style. In addition, the link frame (66a, 66b) is not shown in drawing 10 .

43] moreover, the Kaisei location when the location of the F arm 67 (67a, 67b) shown in a continuous line and the R a 68 (68a, 68b) carries out Kaisei of the upper part 32 of an equipment body in drawing 8 and drawing 9 -- being own -- the upper part 32 of an equipment body -- the body lower part 33 of equipment -- receiving -- abbreviation -- it ept level. On the other hand, the location of the F arm 67 (67a, 67b) shown in a dotted line and the R arm 68 (68a, 68b) shows the closing location at the time of making the upper part 32 of an equipment body close to the body lower t 33 of equipment.

44] Furthermore, a supporter 71 (71a, 71b) is supported for the F arm 67 (67a, 67b) and the FR frame 65 (65a, 65b), abling free rotation, and a supporter 72 (72a, 72b) supports the R arm 68 (68a, 68b) and stay 69 (69a, 69b) free otation]. Moreover, a supporter 77 (77a, 77b) is supported for the F arm 67 (67a, 67b) and a link frame 66 (66a, 66b), abling free rotation, and a supporter 78 (78a, 78b) supports the R arm 68 (68a, 68b) and a link frame 66 (66a, 66b) e [rotation] .

45] Drawing 11 is drawing explaining the drive of the above-mentioned link structure. In addition, as mentioned ove, a link mechanism is bilateral symmetry and explains the drive of the link structure corresponding to drawing 8 ecially in drawing 11 . Therefore, in drawing 11 , space right-hand side is the transverse plane of printer equipment . As mentioned above, F arm 67a is prepared in supporter 71a free [rotation], and F arm 67a is fixed to rotation gear a'. Moreover, R arm 68a is prepared in supporter 72a free [rotation], and R arm 68a is fixed to rotation gear 72a'. erefore, F arm 67a and rotation gear 71a' rotates as one, and R arm 68a and rotation gear 72a' also rotates it as one.

46] moreover, above-mentioned rotation gear 71a' and 72a' -- in between, the middle pulley 73 infixes -- having -- middle pulley 73 -- minding -- rotation gear 71a' and 72a' -- in between, it is built over the belt 74. In addition, the ddle pulley 73 gives predetermined tension to a belt 74.

47] Moreover, the body of revolution 75 which builds in a damper style is formed in rotation gear 72a'. An oil mper is built in this body of revolution 75, the rapid fall by the gravity at the time of dropping the upper part 32 of an

equipment body is pressed down, and it has the function dropped smoothly. On the other hand, the climbing power to upper part at the time of opening the upper part 32 of an equipment body is given by the spring 76. that end attaches spring 76 in case 33' of the body lower part 33 of equipment -- having -- rotation gear 71a' -- predetermined time passing around is carried out inside, and that tip (other end) is attached firmly to the hole which is not illustrated [which is formed in case 33']. Therefore, it works so that rotation gear 71a' may be rotated in the direction of arrow-head a', and the energization force of a spring 76 gives climbing power to the upper part 32 of an equipment body.

[48] Namely, if rotation gear 71a' rotates in the above-mentioned arrow-head a' direction, F arm 67a is rotated in the same direction, and a belt 74 will be turned in the direction of arrow-head a at coincidence, rotation gear 72a' will be rotated in the direction of arrow-head a", and R arm 68a will be rotated in this direction. Therefore, by the above-mentioned drive, a link mechanism works, and it rotates according to the path of a two-dot chain line which shows F arm 67a and R arm 68a in this drawing, and moves up in the upper part 32 of an equipment body.

[49] On the other hand, drawing 12 is drawing explaining the configuration of a bearing, and these four drawings are drawings explaining one configuration in the existing bearing. 50' which a bearing 90 is the bearing of the drum shaft (positioning shaft) of the above-mentioned photo conductor drum 50, and is shown in this drawing shows a drum shaft. Moreover, the crevice 91 shown in this drawing is a location where above-mentioned drum shaft 50' is set, for example, drum shaft 50' approaches from the upper part, and is set to a crevice 91. Moreover, 92 is bearing material and the ring 93 is formed in the interior. A spring 93 is arranged in the periphery of a pivot 94 possible [sliding], and, specifically, the spring 93 is infixed between package case 92' and the above-mentioned pivot 94. Moreover, a slide member 95 is formed in the end of a spring 93, and it is constituted possible [sliding of an arrow head c and the direction of c']. In addition, the direction of arrow-head c' shown in this drawing is a direction which the energization force of a spring 93 commits.

[50] Moreover, the above-mentioned bearing material 92 is constituted rotatable in an arrow head d and the direction d' focusing on a pivot 96, and this rotation force is supplied by the actuator shown in drawing 13 . In addition, the dotted line shown in drawing 12 shows the physical relationship of an actuator. Moreover, ** section of the various cases which dotted-line **** 51c' shown in drawing 12 showed the roll axes of the above-mentioned development roll 50, and 97 showed the switch, and were prepared in the bearing 90 shows opening.

[51] An actuator 98 is driven in the arrow head e shown in drawing 13 , and the direction of e', for example, drives pivot 94 of the above-mentioned bearing material 92 in the above-mentioned arrow head d and the direction of d'. For this reason, the heights 99 for a drive are formed in an actuator 98, and the bearing material 92 is driven in an arrow head d and the direction of d' according to the drive to the direction of an arrow head of an actuator 98. Moreover, the drive of the bearing material 92 is performed focusing on a pivot 96. In addition, the location which is not visible in drawing 12 has the configuration of the pivot 94 shown in drawing 13 .

[52] On the other hand, drawing 14 shows the configuration which installed four bearings 90 of the above-mentioned configuration, and corresponds to above-mentioned MAZENDA (M), cyanogen (C), yellow (Y), and the image formation units 44-47 (drum kit C1) of black (K). For example, it is as bearing 90M corresponding to the image formation unit 44 (drum kit C1) of MAZENDA (M), and bearing 90C corresponding to the image formation unit 45 (drum kit C1) of cyanogen (C), and being shown in this drawing below. therefore -- a bearing -- 90 -- M -- right above -- ** -- a print head -- 51 -- b-M -- being located -- a photo conductor -- a drum -- 50 -- a drum -- a shaft -- 50 -- ' -- a crevice -- 91 -- setting -- having -- moreover -- a bearing -- 90 -- C -- right above -- **** -- a print head -- 51 -- b-C -- being located -- corresponding -- a photo conductor -- a drum -- 50 -- a drum -- a shaft -- 50 -- ' -- a crevice -- 91 -- setting -- having -- following yellow (Y) and black (K) -- being the same .

[53] Here, the above-mentioned actuator 98 is the configuration of driving four bearing material 92, and the above-mentioned heights 99 for a drive are formed in the location corresponding to each bearing material 92. Moreover, the drive gear which body of revolution 100 was formed in the end of an actuator 98, and was prepared in the gear formed in the peripheral surface of body of revolution 100, the edge of an actuator 98, and its fixed range engages. Moreover, the above-mentioned body of revolution 100 is a configuration which body of revolution 100 rotates by the gear prepared in the gear formed in the periphery at the peripheral surface of the drive gear 101 engaging, and rotating the drive gear 101. Moreover, it is the configuration of making an actuator 98 driving in an arrow head e and the direction of e' through the drive gear 101 and body of revolution 100, by forming a lever 102 in the drive gear 101, and operating a lever 102.

[54] In the above configuration, the switching action of the above-mentioned printer equipment 31 and lock actuation the image formation units 44-47 (drum kit C1) are explained. Usually, printer equipment 31 is used in the condition which shows in drawing 1 . And when a form runs short, form supply directions are displayed on liquid crystal display of the operation panel 34, and form supply to a sheet paper cassette 38 is performed. On the other hand, when there

form plugging, the location is displayed on liquid crystal display 34b, for example, covering 40 is opened wide, and processing is performed.

55] On the other hand, when form plugging is the interior of printer equipment 31, or when exchanging a drum kit and the toner set C2 (when it is not a location corresponding to covering 40) and maintaining others further, a front cover 37 is opened. In addition, the condition of having opened the front cover 37 wide is as being shown in above-mentioned drawing 2.

56] Next, a lock is canceled that Kaisei of the upper part 32 of an equipment body should be carried out in this condition. Discharge of this lock turns the above-mentioned lever 102 in the direction of arrow-head f', as shown in drawing 14, and it operates a lever 102 from a continuous-line location to a dotted-line location. By this actuation, it rotates in this direction (the direction of arrow-head f'), and body of revolution 101 drives an actuator 98 in the direction of arrow-head e' through body of revolution 100 and a rack gear. Moreover, each bearing material 92 of bearings 90M-90K rotates in the direction of arrow-head d' by the drive of an actuator 98. That is, the bearing material 92 which was at the location shown in drawing 13 according to a two-dot chain line returns to the continuous-line location of this drawing. In addition, the energization force to the direction of arrow-head d' over the above-mentioned bearing material is realized by the non-illustrated elastic member.

57] Therefore, the bearing material 92 moves to the location of a two-dot chain line from the continuous-line location shown in drawing 12, and immobilization of drum shaft 50' is canceled by the above-mentioned drive. Therefore, in this condition, immobilization of drum shaft 50' becomes up movable [the up airframe 32] by being released, canceling to coincidence the lock device in which it does not illustrate, and opening the up airframe 32 from lower airframe 33. Then, Kaisei of the body of equipment is carried out completely, and exchange of a drum kit C1 and the toner set C2 and various maintenance processings are performed.

58] On the other hand, in ending a maintenance and closing the upper part 32 of an equipment body, it depresses the upper part 32 of an equipment body caudad. In this case, it can close, without applying the strong force with the self-weight of the upper part 32 of an equipment body. Moreover, with an oil damper, the energization force of a spring 76 can be resisted and it can close smoothly (drawing 11). In addition, in this case, it moves in the direction of arrow-head a, rotation gear 71a' rotates in the direction of arrow-head b', rotation gear 72a' rotates in the direction of arrow-head b" to coincidence, and a belt 74 closes the upper part 32 of an equipment body in the body lower part 33 of equipment.

59] If the up airframe 32 is set to the bearing material 92, the bearing material 92 is in the location of the two-dot chain line shown in drawing 12, and drum shaft 50' is located on a crevice 91. In this condition, a lever 102 is moved from a dotted-line location to a continuous-line location by operating a lever 102 in the direction of arrow-head f. By this actuation, it rotates in this direction (the direction of arrow-head f), and body of revolution 101 drives an actuator 98 in the direction of arrow-head e through body of revolution 100 and a rack gear. Moreover, each bearing material 92 of bearings 90M-90K rotates in the direction of arrow-head d by the drive of an actuator 98. That is, the bearing material which was in the location shown in drawing 12 according to a two-dot chain line moves to the continuous-line location of this drawing. Moreover, at this time, according to the energization force of a spring 93, the force of stopping drum shaft 50' can work in the direction of arrow-head c', and drum shaft 50' can be fixed to it.

60] And the above-mentioned immobilization can bundle up four drum shafts 50', and can be performed to coincidence, and the image formation units 44-47 can be easily locked by easy processing in which a lever 102 is operated.

61] In addition, although the configuration of the bearing of this example was constituted from explanation of the above-mentioned operation gestalt using the bearing material 92, an actuator 98, body of revolution 100, and a lever 102, it is not necessarily limited to the above-mentioned configuration.

62] [Effect of the Invention] As explained to the detail above, according to this invention, two or more image formation units used with a tandem system can be locked easily, and the lock device of a quick image formation unit can be operated.

[translation done.]

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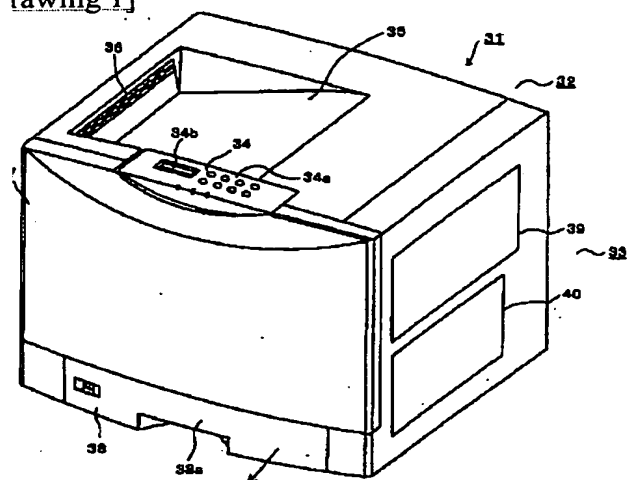
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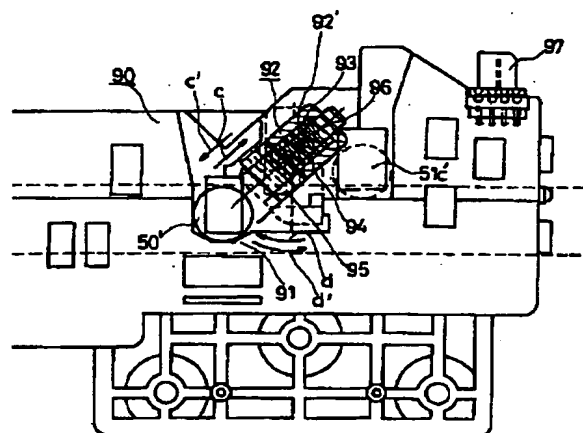
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LAWINGS

rawing 1]



rawing 12]



rawing 2]

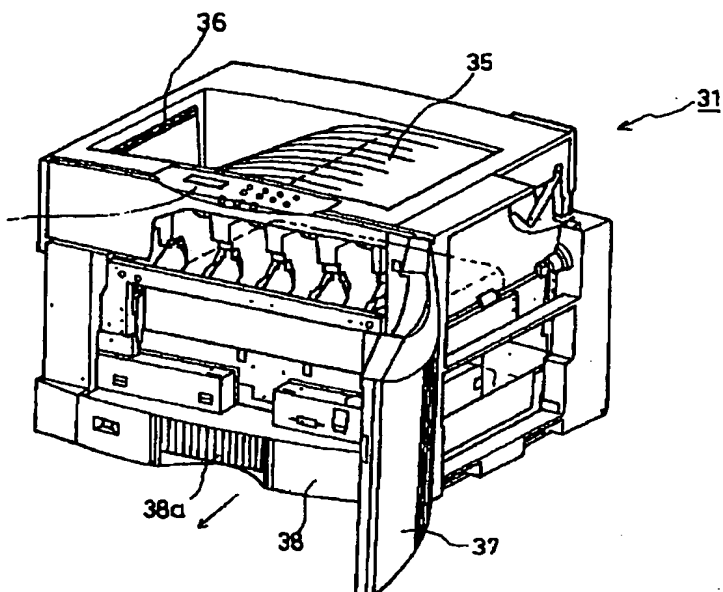


Fig. 3

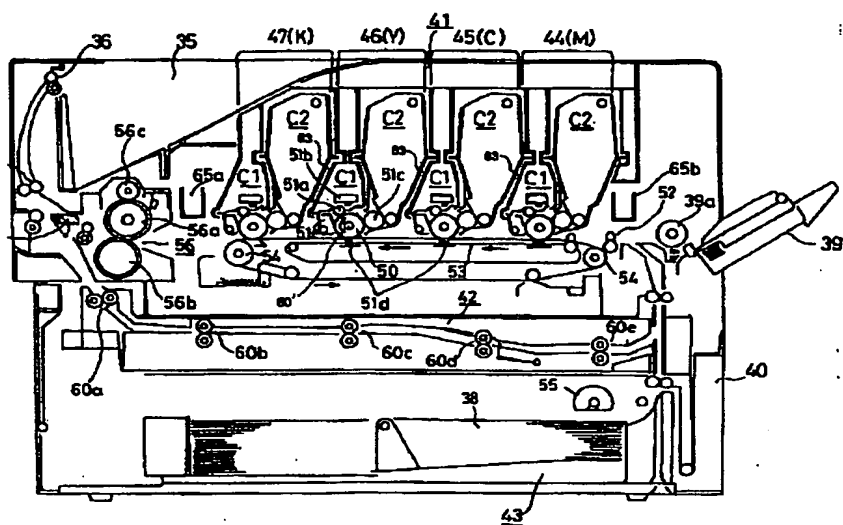


Fig. 13

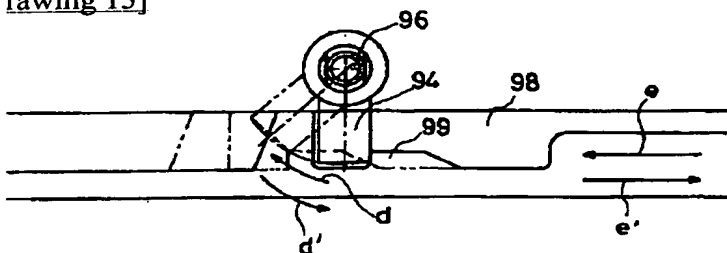
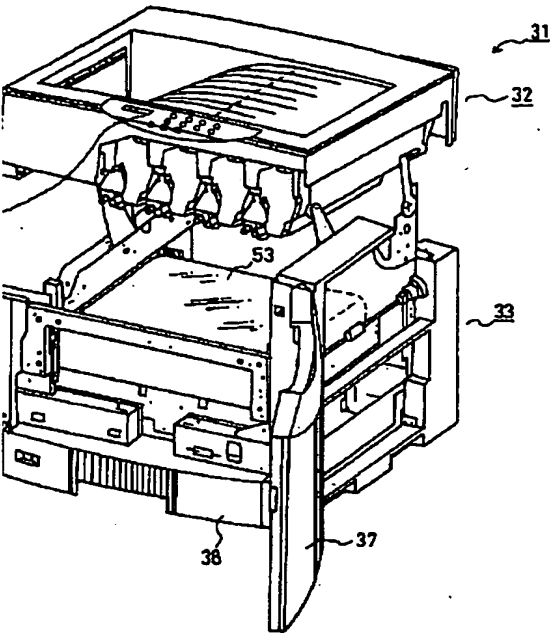
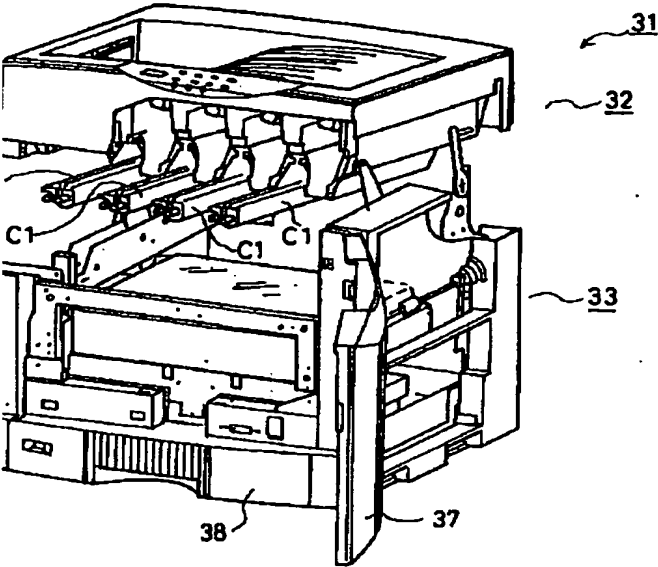


Fig. 4



rawing 5]



rawing 6]

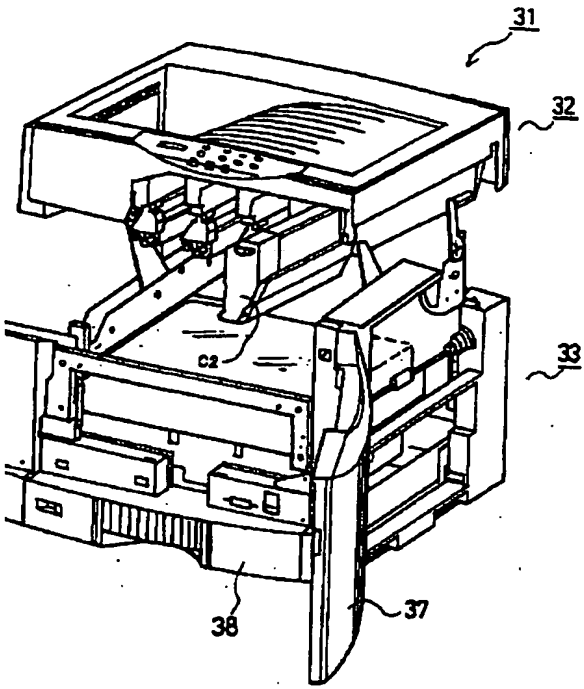


Figure 15]

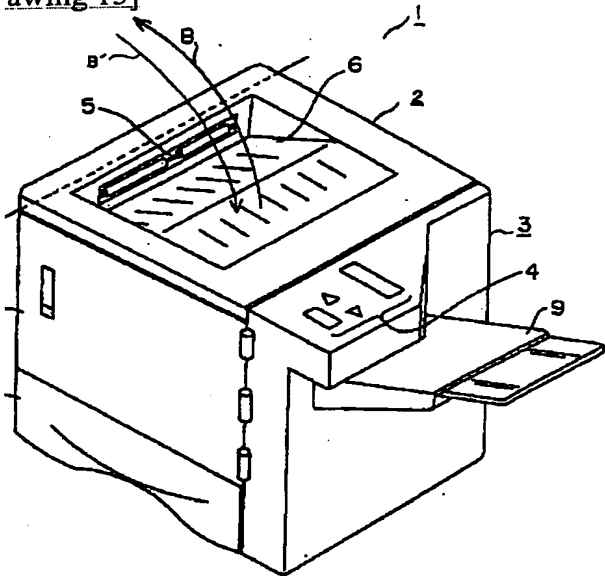


Figure 7]

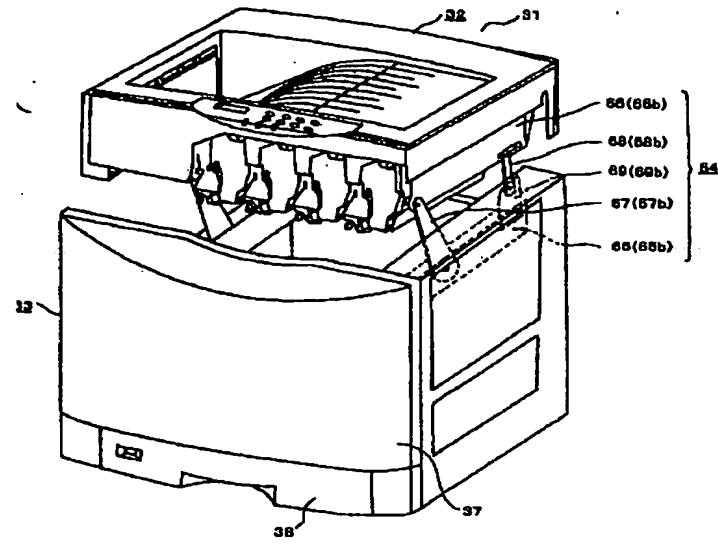


Figure 8]

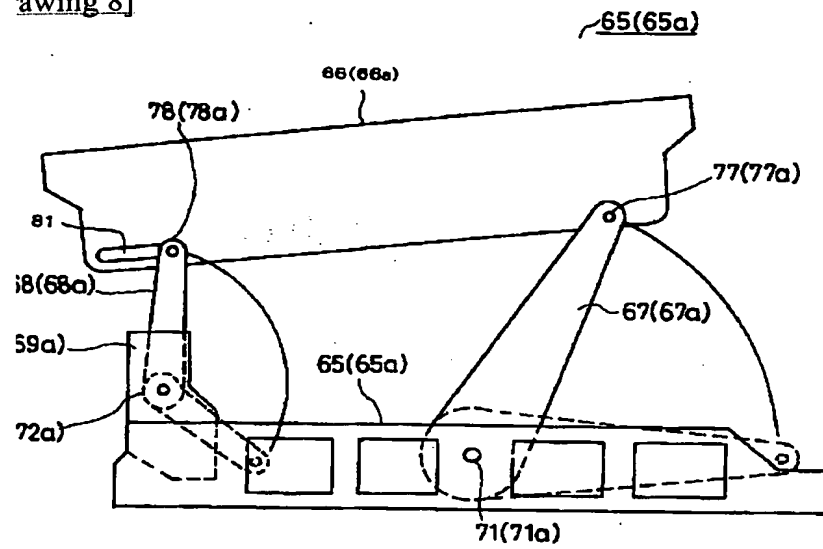
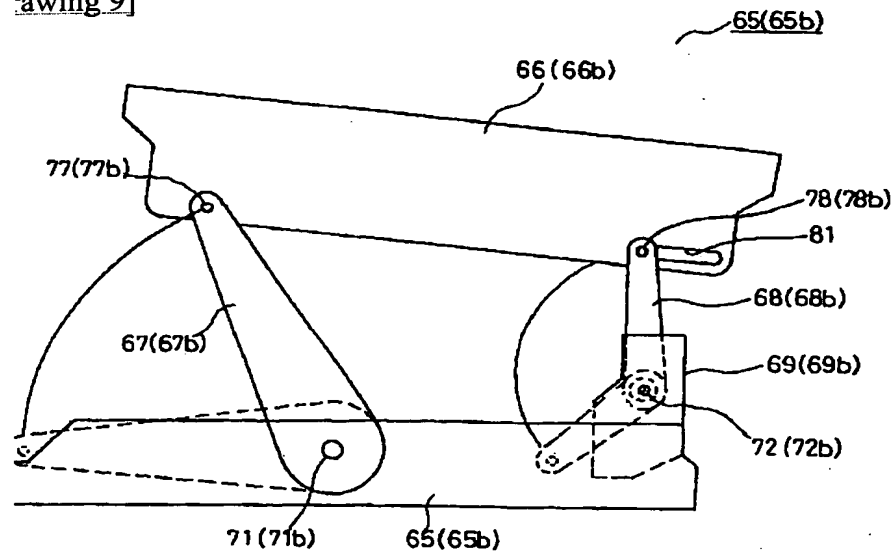
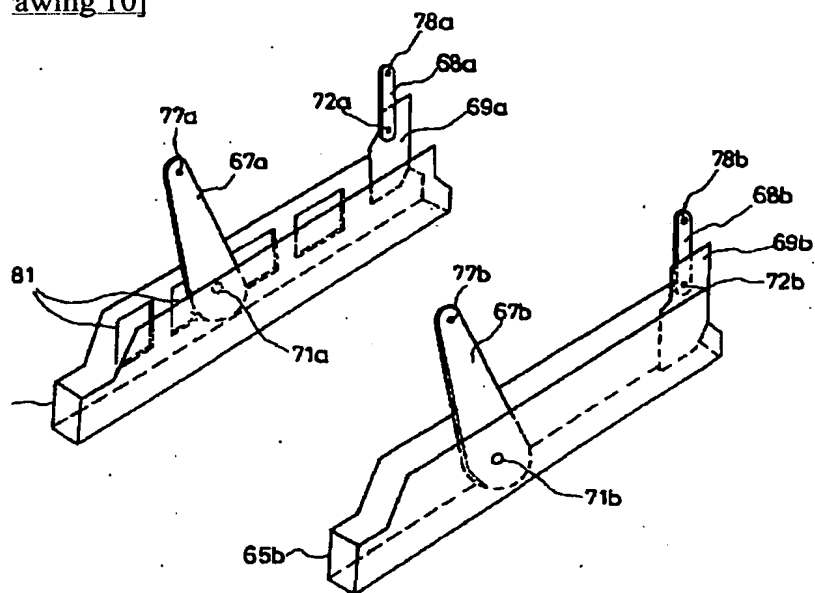


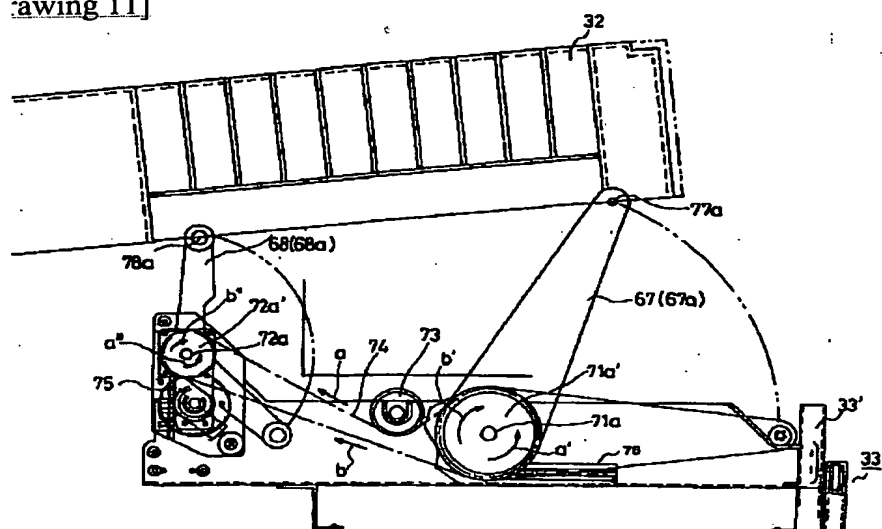
Figure 9]



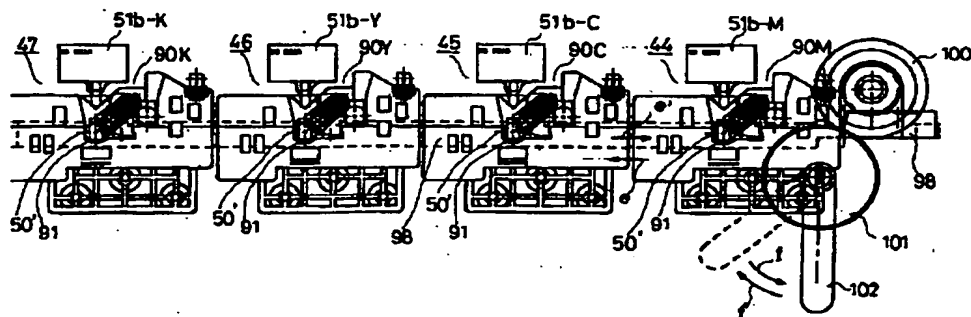
rawing 10]



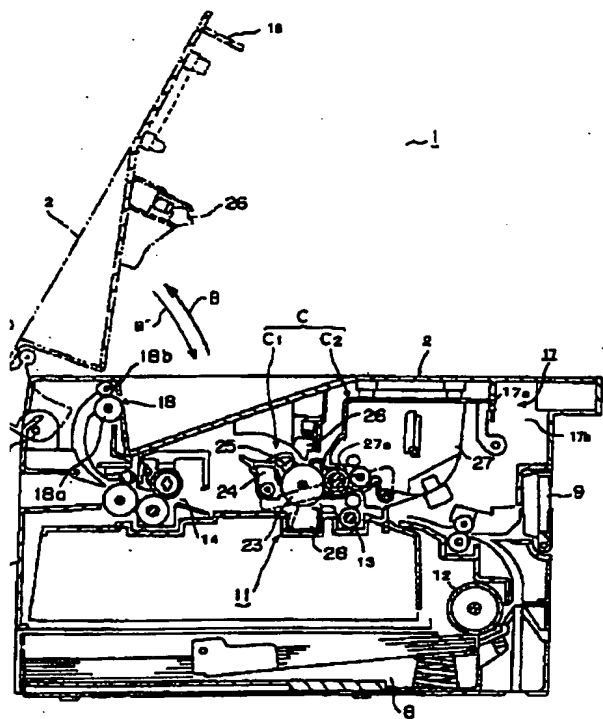
rawing 11]



rawing 14]



rawing 16]



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